A Preliminary Evaluation of Management of Riparian Areas Under the Forest and Range Practices Act

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Executive Summary

This report aims to summarise and present the key requirements for riparian management under the *Forest Practices Code Act* and the *Forest and Range Practices Act (FRPA)*, and to provide preliminary feedback on the interpretation of riparian management provisions under FRPA by licensees for use in the Act's continuous improvement cycle. Eight forest stewardship plans were analysed for their approaches to riparian management. Licensees opted largely for familiar practices, with few plans exhibiting notable deviation from Code-level practices, and limited innovation in results and strategies. Lack of clarity around proposed alternatives was common. Preliminary observations indicate that licensees have a fundamental understanding of FRPA with some continued misunderstanding around the development of proposed alternatives. Many licensees are hesitant to develop new approaches to riparian management. A number of possible reasons for this are explored further in the *Discussion*.

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1.0 Introduction

The *Forest and Range Practices Act* was begun by the newly elected Liberal Government in 2001 as part of their effort to revitalize the BC forest industry. The Ministry of Forests was tasked with creating the new *Forest and Range Practices Act* (FRPA) and embarked on developing it through an unprecedented process of detailed stakeholder consultation and involvement. The ensuing Act was a results-oriented scheme that reduced the regulatory and administrative burden of the Forest Practices Code Act (FPC) and provided forest operators with greater versatility with which to manage forest resources in a more localised and innovative fashion. FRPA came into force January 31, 2004 and is scheduled to be in full effect by January 31, 2007.

The management of forest and range resources in British Columbia involves a number of stakeholders. The management of streamside, or riparian, areas in particular garners much attention. With such a high number of interest groups involved in resource management, contention easily arises. For this reason, it is critical that the transition to FRPA is delivered as seamlessly as possible and in a manner that facilitates understanding among the numerous stakeholders involved.

This report aims to provide a common understanding about how riparian management is conducted. Such knowledge is essential to the many stakeholders concerned with the management of BC's aquatic resources and will serve as a solid basis for communication between them as they move towards consensus and satisfaction over the management of streamside areas.

The preliminary findings in this report will also provide early feedback to government regarding FRPA's implementation, and in particular, the development of FRPA's foremost vehicle of management: the Forest Stewardship Plan (FSP). With only two FSPs approved in the province, preliminary findings at this point are not conclusive, but serve to provide a valuable sense of how licensees are proceeding under the new framework, and where further implementation aid may be required or reinforced to maximise success. This document may also promote discussion among other stakeholders from which valuable feedback may be gathered and incorporated into the first stages of continuous improvement of FRPA.

It is anticipated that the material presented here will make the goals of government and the management procedures and mechanisms of riparian areas in BC more transparent in the interests of furthering the knowledge and comfort of those that manage the resource and those that own it.

2.0 Project Objectives

1. To provide common understanding among resource agencies, industry, resource professionals, and other stakeholders on how riparian areas will be managed under the *Forest and Range Practices Act*.
2. To document the extent of consistency between the *Forest Practices Code* and *Forest and Range Practices Act* with regard to riparian management.
3. To share leanings from the first forest stewardship plans provincially, as one element of continuous improvement for the *Forest and Range Practices Act*.
4. To provide inputs to the following related government business processes:
    - Training and implementation of the *Forest and Range Practices Act*;
    - Effectiveness evaluations of the *Forest and Range Practices Act*;
    - Policy and legislation development;
    - Development of non-statutory guidance to support the *Forest and Range Practices Act*; and
    - Public communication.

3.0 Procedure

Forest stewardship plans were obtained from forest district and forest region offices throughout the province. Effort was made to obtain plans in various stages of approval and with various levels of collaboration: two of the plans are currently approved and six are in draft stage; three are multi-district, and 2 are multi-licensee. Summaries of the requirements and structure of the *Forest Practices Code* (FPC) and *Forest and Range Practices Act* (FRPA) were researched using primarily the Acts themselves in conjunction with available training materials and summaries produced both formally and informally by agency staff.

The forest stewardship plan analyses were conducted with the project objectives in mind and considered:

- Whether regulatory defaults were chosen for management practices and, if so, which ones;
- The extent of deviation from defaults;
- Different approaches used for management alternatives;
- The level of innovation where innovation implies a fundamentally unique, creative and acceptable practice; and
- The level of detail provided, including whether a rationale was submitted with plans and whether the rationales deviated substantially.

Although methods do not explicitly include analysis of results and strategies for consistency with objectives, comment is made regarding this consistency since it relates directly to the extent of deviation from defaults.

Level of detail is measured against the requirements in FRPA and considers the level that may be required to satisfy a plan adjudicator prior to plan approval. Innovation is difficult to quantify and is reported here as a comparative observation between the defaults and other practices proposed by licensees.

Members of relevant groups including the Provincial FRPA Implementation Team and FRPA policy team were contacted for their input into plan interpretation and any relevant feedback was considered during the analysis and included in the discussion. Contact was maintained with regional and district staff in order to obtain the most current FSPs, for their input, and to stay abreast of any new submissions, approvals or dismissals.

4.0 Riparian Management Under the Forest and Range Practices Act

Riparian management in BC is a contentious ever-evolving issue that involves a wide variety of groups, regulatory statutes and processes, recommended practices, and a range of resource values including fish and water quality. Appendix 1 depicts this variety of inputs to riparian management and is a simplified description since many of the inputs have complex relationships to each other. In BC, riparian management is governed directly by provincial resource statutes but is also subject to federal statutes, indirect statutes such as those that govern the resource professionals in the province, and jurisprudence. Policy is another major influence since it determines the general direction of riparian area management and the contents of the governing acts. On a planning and operational level, many inputs can guide practices in riparian areas such as specific 'best management practices' guidelines; emerging science; scientific, government or operational guidelines; relevant training; guidance by the Chief Forester; compliance and enforcement programs; and, the importance of maintaining community support, or "*social license*". Voluntary market certification can also influence forest practices through a licensee's ambition to appeal to environmental markets that value sustainable forestry.

4.1 The FRPA Framework

The primary goal in creating and implementing FRPA was to reduce the administrative burden, planning complexity, and associated costs of forest management while maintaining the balanced environmental, social, and economic standards of the *Forest Practices Code Act* (termed "Code-equivalency"). The new framework accomplishes this by condensing the critical elements of the *Forest Practices Code Act* (FPC) and incorporating new, supportive, and informative elements.

Riparian management in general is accomplished under FRPA by a limited amount of legislation that is supported by a vast network of non-legislative elements. The framework in which FRPA works is illustrated in Appendix 2. A central core of legislation now exists to uphold the values and standards determined by society. This statutory core is enhanced by a structure of non-statutory elements that interact directly with the values managed through legislation. The framework is constructed within the overarching timber supply impact policy used as a guide under the FPC (represented in Appendix 2 as the outermost box). In the change to FRPA, the FPC Act and regulations were decreased in size and the guidebooks, both legal and non-legal, were eliminated as a suggested or mandatory reference. While some resource values underwent deregulation in the shift between acts, a great degree of regulation pertaining to riparian management is retained in FRPA.

4.2 How FRPA Manages Riparian Values

A visual case study of how riparian and water values are managed under FRPA is presented in Appendix 3 and is discussed in greater detail below.

4.2.1 In the Act and Regulations

The Act provides the groundwork for management of resource values in general. Virtually all management of values, including riparian, is accomplished through planning provisions and practice requirements in the Act and regulations. Provisions that relate directly to resource values are found in the regulations, but broad provisions are included in the Act and require:

- A FSP prior to any development of Crown Land (s.3);
- A licensee write intended results or strategies which are consistent with objectives set by government (s.5);
- A site plan prepared that is consistent with objectives set by government prior to development of Crown Land (s.10)
- Certain contents in a plan for it to be approved (s.16); and
- The holder of an approved plan to achieve any proposed results and carry out proposed strategies (s.21)

In addition, FRPA defines and prohibits damage to the environment (s.46) and contains the authorisation for government to create further objectives enabled by regulation for:

- Ungulate winter range, wildlife habitat areas and general wildlife measures (s.149.1);
- Community watersheds (s.150);
- Watersheds with significant downstream and fisheries values and significant watershed sensitivity (s.150.1);
- Lakeshore management zones and objectives (s.150.2); and
- Streams, wetlands and lakes (s.150.5).

FRPA also establishes the authority for government to create objectives in regulation relating to identified resource values (s.149). This section in FRPA is the precursor to the objectives in FPPR sections 5 to 10.

4.2.1.1 Objectives

FRPA's main binding component is that it requires primary forest activities to be consistent with government objectives. Government maintains influence by retaining the ability to modify or add objectives when needed, and provisions in the Act ensure licensees amend their plans accordingly (FRPA s.8) with some exceptions such as cutting and road permits already approved. Consistency with objectives and the need for an exemption is adjudicated by a delegated decision maker (DDM), currently identified as

a district manager. There are several levels of objectives that licensees must ensure their results and strategies are consistent with. These include:

1. Land Use Objectives
2. Objectives in regulation
3. Objectives enabled by regulation

Land use objectives - These are objectives identified by the public and through government in regional or sub-regional planning processes. Land use objectives from regional land use plans apply through FRPA to specific forest stewardship plans or forest development units (FDUs), when communicated in higher-level plan orders

Objectives in regulation - These exist for the three different tenure types- forest, woodlot and range tenures- but discussion here will be limited to forest tenures.

The Forest Planning and Practices Regulation (FPPR) is the main regulation guiding forest tenures and contains riparian objectives and objectives carried forward from the FPC with which results or strategies must be consistent. The objective for water, fish, wildlife and biodiversity in riparian areas is set out in FPPR section 8 as follows:

> The objective set by government for water, fish, wildlife and biodiversity within riparian areas is, without unduly reducing the supply of timber from British Columbia's forests, to conserve, at the landscape level, the water quality, fish habitat, and biodiversity associated with those riparian areas.

There are two additional objectives that address specific riparian-related values including the objective in s.8.1 for fish habitat in fisheries sensitive watersheds, and the objective in s.8.2 for water in community watersheds. Like the objective in FPRR s.8, a licensee must ensure their results or strategies are consistent with these objectives.

Objectives enabled by regulation - These refer to objectives created under the Government Actions Regulation (GAR), another regulation in FRPA. GAR retains the authority to identify and create objectives for elements such as community watersheds, fisheries sensitive watersheds, and temperature sensitive streams as they are identified and required. GAR provides the mechanism with which government can modify resource objectives, thereby retaining landowner control. By changing an objective, government forces a licensee to amend their plans to remain consistent with the new objective.

4.2.1.2 Plan and Practice Requirements

FRPA contains two kinds of riparian management requirements: plan requirements that must be addressed in a FSP, and practice requirements that do not need to be addressed in a FSP.

Results and strategies address plan requirements in a FSP. For the riparian objective set by government (FPPR s.8), licensees may choose to write their own alternative results or strategies or adopt default practice requirements in the FPPR. Due to the significance and complex nature of riparian management, defaults in regulation are intended to clearly communicate a government-endorsed standard of practice that, if adopted, help simplify a licensee's planning procedure and may expedite the plan adjudication process. Licensees can use the defaults as they appear in regulation (FPPR sections 47-51, 52(2), 53), or they may propose alternatives ranging from a slight modification of the default to an entirely new practice (conditional exemptions are found in FPPR sections 12.3(1) to (7)).

In the case that a licensee proposes alternatives that deviate from commonly accepted practice, the DDM may require a licensee to supply a level of 'proof' commensurate with the degree of their deviation. This rationale is not an explicit requirement of the FSP package, but must be supplied to the DDM at their request to ensure their understanding. Ultimately, licensees that propose results and strategies that deviate from known standards of practice will need to demonstrate to the DDM how their proposed alternative is consistent with objectives set by government.

Practice requirements for riparian management must be followed in the field, and therefore are not addressed in a FSP. Conditional exemptions are available for some practice requirements (exemptions found in FPPR s.12.31, 12.32) and exemptions are also possible from the minister responsible (FPPR s.91, 92). Practice requirements are written for values and practices that carry a higher level of risk such as landslides (FPPR s.37), fan destabilisation in the coast forest region (FPPR s.54), use of livestock in riparian areas (FPPR s.58) or roads in a community watershed (FPPR s.62).

A third type of requirement, measures, may also be relevant to riparian management. Measures are included in the Act specifically for invasive plants and natural range barriers. However, the relevance of invasive plant measures to riparian management is under debate and has therefore been excluded from discussion here regarding riparian requirements.

4.2.2 In the Non-Statutory Framework

An important element of riparian management in the non-statutory framework is professional reliance. This is the reliance upon the standards, ethics, and due diligence of professionals and the responsibility of their independent, self-governing bodies to hold them to account if they behave in a manner contrary to stated professional expectations and standards, and the public good. Practising resource professionals in BC are responsible first and foremost to the public, irrespective of their immediate employer. It is for these reasons that FRPA is able to embrace professionals as a reliable element in its framework. A good illustration of how professional reliance upholds the goals of deregulation and results-based practices is in the conduct of non-mandatory riparian assessments. Under the FPC, such assessments were legally required routinely. However, their use is now under the discretion of resource professionals, who are able, qualified and responsible for determining when, where and what type of assessment is needed, thereby affording forest operators flexibility and efficiency.

A second integral mechanism in the non-statutory framework for riparian management is the newly developed FRPA Resource Evaluation Program (FREP). FREP was established to determine whether government's resource management objectives are being met under such a framework. FREP functions at the provincial level, conducting overall effectiveness evaluations, and the district level, conducting resource stewardship monitoring. At both provincial and district levels, three types of evaluation may be used including implementation, effectiveness and validation monitoring. Compliance and enforcement is not currently evaluated by FREP, but the two programs work co-operatively to share information. FREP conducts evaluations with several levels of intensity ranging from routine, through extensive to intensive. In addition, FREP tailors its use of indicators and monitoring protocols specific to each evaluation intensity as needed to most effectively gather the appropriate level of information. The program has been most recently occupied with developing and implementing routine-level monitoring protocols and indicators for the riparian management component of the FRPA "fish" value, among other values. Pilot studies were completed is 2004, and operational monitoring of streams and riparian areas are underway and may be implemented in as many as 15 forest districts in 2005.

FREP's objective makes it integral to effective management of riparian areas. FREP will provide valuable input regarding FRPA's effectiveness as a regulatory framework, quantify its resulting on-the-ground practices, and deliver fundamental feedback for the continuous improvement of the FRPA model. While FREP doesn't directly manage resources or impose requirements, it is a crucial extension of FRPA that bridges the legislation with practices on the ground.

4.3. The Forest Practices Code versus the Forest and Range Practices Act

The change from the *Forest Practices Code* (FPC) to FRPA is most often characterised as the transition from a plan and process-based regime to a results-based regime. While the architecture of the two statutes is unique, they contain the same fundamental provisions for the management of riparian areas.

4.3.1 Requirements under the FPC and FRPA

In keeping with the goal of Code-equivalency, many important provisions from the FPC were adopted into FRPA as defaults and practice requirements, including regulations for pesticides, permanent access structures, revegetation and riparian widths (Appendices 3 and 4). This transitioning is intended to provide continuity to the management of streamside areas. The primary difference is that much of the detail in the Code has been removed to accommodate FRPA's results-based approach (Table 1).

Table 1. A comparison of the major structural changes from the FPC to FRPA.

Forest Practices Code	*Forest and Range Practices Act*
19 Regulations	12 streamlined regulations
7 Legal Guidebooks	No required guidebooks

36 Guidebooks	
Plans, plan contents and plan approval steps	Streamlined planning with fewer plans
Legally-required assessments	Professional reliance and legislation
Professional Legislation	

An example is useful to illustrate the results-based nature of the new Act and regulations. Where FRPA states in FPPR s.57 to "conduct forest activities at a time and in a manner that is unlikely to harm fish or destroy, damage or harmfully alter fish habitat", the FPC equates a suite of direct provisions to achieve the same result:

- Operational and Site Planning Regulation section 39
- Forest Road Regulation sections 10, 11, 12, 13, 14, 20
- Timber Harvesting and Planning Regulation sections 10, 11, 12, 15, 20, 23, 24,
- Site Planning Regulation sections 5, 6,

There is concern that the elimination of the many prescriptive elements renders the management of riparian areas under the Code and FRPA inconsistent. The perennial example of this is the 5-m machine-free zones required under the FPC. In FRPA, this requirement is replaced by two broad provisions developed to protect stream bank stability:

> *Restrictions in a riparian reserve zone*
> An agreement holder must not carry out the following silviculture treatments in a riparian reserve zone: mechanized site preparation or broadcast burning for the purpose of site preparation [FPPR s.51(3)(b)]

and,

> *Restrictions in a riparian management zone*
> A holder of a minor tenure who fells trees in a cutblock within a riparian management zone of a class described in Column 1 must ensure that
> (a) the percentage of the total basal area within the riparian management zone specified in Column 2 is left as standing trees, and
> (b) the standing trees are reasonably representative of the physical structure of the riparian management zone, as it was before harvesting [FPPR s.52(1)].

While the provisions for *Restrictions in a riparian management zone* does not outwardly prohibit mechanization, it is limited through requirements to maintain stream bank stability [FPPR s.52(2)]. FPPR sections 51 and 52 are augmented by section 57 that states:

> An authorized person who carries out a primary forest activity must conduct the primary forest activity at a time and in a manner that is unlikely to harm fish or destroy, damage or harmfully alter fish habitat (FPPR s.57)

The Code enforced non-mechanization through numerous detailed prescriptions, an 'adequately manage test' for plan adjudication and a detailed compliance and enforcement process. FRPA takes a different approach: by not explicitly prohibiting mechanisation in riparian areas, flexibility is afforded to professionals to gauge where the use of machinery would be appropriate, and consistent with both objectives and practice requirements.

5.0 Analysis of Forest Stewardship Plans

Forest stewardship plans analysed here ranged in length from approximately 15 to 60 pages, not including any additional background notes. The plans were organised differently, but generally opted for a variation on the format of restating the relevant objective and listing the following applicable sections and alternatives. The following section provides an overview of plan contents.

Table 2. Comparison of the sections of FRPA adopted as defaults by forest stewardship plans. Only FPPR sections that directly relate to riparian areas and water are included. Other provisions that address riparian-related values are included comprehensively in Appendix 4. Plan requirements must be addressed in a FSP while practice requirements do not. GAR objectives must only be addressed where they exist.

✓ = Defaults accepted; R&S = Results or strategies; - = Not mentioned or not clearly specified

	Plan A (approved; single district; single licensee)	**Plan B** (approved; multi-district; single-licensee)	**Plan C** (draft; single-district; single-licensee)	**Plan D** (draft; single-district; single-licensee)	**Plan E** (draft; multi-district; multi-licensee)	**Plan F** (draft; multi-district; multi-licensee)	**Plan G** (draft; single-district; single licensee)	**Plan H** (draft; single-district; single-licensee)
Stream Reserve Widths s.47 (4), (5), (6)	✓	✓	Yes and R&S for 47(4)	✓	✓	✓	✓	✓
Wetland Reserve Widths s.48 (3), (4), (5)	✓	✓	Yes and R&S for 48(3)	✓	✓	✓	✓	✓
Lake Reserve Widths s.49 (2), (3)	✓	✓	Yes and R&S for 49(2)	✓	✓	✓	✓	✓
Restrictions in a RMA s.50(1)	✓	✓	-	✓	✓	✓	✓	✓
Restrictions in a RRZ s.51(1) and (3)	✓	✓	✓	✓	✓	✓	✓	R&S
Restrictions in a RMZ s.52 (2)	✓	✓	Yes and R&S	✓	No R&S included with 12(3)	No- R&S included with 12(3)	✓	✓
Temperature Sensitive Streams s.53	✓	✓	-	✓	✓	✓	✓	✓
Tree retention in a RMZ s.12(3)	Accepted provisions for minor tenures in 52(1)	Accepted provisions for minor tenures in 52(1)	R&S	R&S	R&S	R&S	R&S	R&S
s.55, 56, 57	✓	✓	R&S	✓	✓	✓	✓	✓
s.59, 60, 61	✓	✓	R&S	✓	✓	✓	✓	✓

5.1 Plan Requirements

Licensees selected a variety of sections for which to accept defaults or propose alternatives. The alternatives proposed in the plans vary in complexity and innovation, with most licensees attempting some level of change from base-line Code-equivalent practices (as represented by defaults). There were few outward errors: two licensees omitted required information and another proposed alternatives for non-alterable practice requirements. The most common variable was the amount of detail provided in proposed alternatives and the presence of an associated rationale that clarified the alternative. Plans D, E, and F were developed in conjunction, but submitted individually and, as a result, contain similarities among results or strategies. A detailed summary of each FSP by Forest Planning and Practices Regulation (FPPR) section and other observations is included below.

5.1.1 Riparian reserve widths (FPPR sections 47, 48, 49)

For the sections describing riparian reserve widths, all plans adopted the default results or strategies with the exception of plan C. Plan C also adopted the defaults, but proposed that altered default riparian reserve widths [sections 47(4), 48(3) and 49(2)] may also be used. The plan's proposed widths are not directly specified, but are said only to reflect the Schedule 1 Factors and do not specify on what basis the defaults or proposals will be adopted. Plan C's most notable deviation from standard practices is included in their proposal for alternative widths where they specify that, "the RRZ retained will not be less than 90% of the area that would be retained through using [the defaults]". The plan provides no indication of how this deviation is consistent with OBJECTIVES SET BY GOVERNMENT, but the associated 'Background Notes' document provides several "ecological rationales" based on scientifically founded flow charts and figures that would be consulted.

Plan E incorrectly proposes alternatives for the definition of where the measurement of riparian reserves begin [FPPR 47(7), (8), 48(6), (7)]. The plan proposes to measure the RRZs and RMZs of riparian areas "where overstory tree cover begins, rather than at the edge of the stream channel bank". Both of these sections are unalterable practice requirements and it is not clear why the proposal is made.

5.1.2 Restrictions in a Riparian Management Area (FPPR section 50)

No alternatives were proposed for the prescribed restrictions in a RMA and all licensees selected the default in regulation. Plan C did not appear to address this section.

5.1.3 Restrictions in a Riparian Reserve Zone (FPPR section 51)

All licensees selected defaults to address restrictions in a RRZ with the exception of one. Plan H proposed alternatives only for riparian classes S3, L3, W1 and W5. While it may be assumed the default applies to the omitted classes, there is no explicit indication of how they will be managed. The proposed alternatives show a noticeable degree of innovation and latitude from default practices. Whereas FPPR s.51(3)(c) distinctly prohibits spacing or thinning in a RRZ, the plan proposes these activities for the enhancement of wildlife and fisheries values, old growth features and to reduce wind-throw potential. Plan C innovatively proposes to designate the RRZ of S3, L3, W1 and W5 riparian areas to "elsewhere within the FDU" thus utilizing a reserve currency system not possible under the FPC, whereby reserves can be moved around the landscape and combined with other features.

The proposed alternatives lack measurable and verifiable detail. For example, a proposed alternative for S3, L3, W1 and W5 riparian classes is that "removal of the felled tree(s) will not have a material adverse effect on the aquatic system or RRZ", where there is no definition of aquatic system nor strategy to determine what constitutes an adverse effect or how it would be measured. Similarly, the plan proposes that "spacing or thinning in second growth riparian reserve zones" may be carried out for various reasons. However, no definition of second growth is included such as age class or stocking specifications and this provision is not tied to any particular riparian classes.

5.1.4 Restrictions in a Riparian Management Zone (FPPR section 52)

Three licensees proposed alternatives for restrictions in a RMZ (FPPR s.52). Two of the licensee's plans, E and F, proposed alternatives for tree retention in a RMZ [FPPR s.12(3)] and requested exemptions from the requirements of FPPR s.52(2) (their provisions are discussed in the section for *Retention of Trees in a Riparian Management Zone).*

The third licensee, plan C, took a different approach by proposing to either accept s.52(2) or revert to results or strategies. The alternative in the FSP only stated that any action taken other than the default would be consistent with the objective in FPPR s.8 and consider the riparian Factors in Schedule 1. Attached Background Notes clarified that an alternative would be selected if the default was not deemed to be "a good management strategy". In this case, an ecological rationale would be conducted "as a basis for operating outsides of the defaults". No alternative was explicitly stated and therefore the level of innovation could not be gauged.

5.1.5 Temperature Sensitive Streams (FPPR section 53)

All licensees except one selected the default in regulation for FPPR s.53. Plan C did not directly address FPPR s.53, but mentioned in its address of other sections that riparian Factor 2(c) (the role of forest

shading) would be considered. It was unclear from the plan and the Background Notes whether the default or an alternative would be applied.

5.1.6 Retention of Trees in a Riparian Management Zone (FPPR section 12(3))

Licensees proposed an array of alternatives to address this requirement. While no default exists for major tenure holders addressing quantifiable retention of trees in a RMZ [FPPR s.12(3)], required basal area retention for minor tenure holders is detailed in FPPR s.52(1) and can provide an acceptable default for holders of other tenures. The two approved plans (A and B) were the only ones to adopt these retention requirements. To address how the retained BA would be representative of pre-harvest physical structure [FPPR s.52(1)(b)], plan B provided additional detail for how trees would be selected within an RMZ. The plan's alternative shows innovation beyond other plans by incorporating WCB regulations and safety considerations explicitly into its strategy for leave tree selection in a RMZ.

Both plans E and F amalgamated the provisions for restrictions in a RMZ [FPPR s.52(2)] with their address of tree retention in a RMZ [FPPR s.12(3)]. They propose a flow chart to determine the amount of area retained by riparian class. To augment the flow chart, the plans provide a section describing restrictions and retention levels in a RMZ. The flowcharts in plans E and F are an innovative communication tool, but lack sufficient detail required to measure the results. The flowcharts do not specify units of measure for area retained, exclude the W4 and Lakeshore E riparian classes, and provide no explanation of the wind-throw hazard evaluation used to navigate them.

Plans E and F propose results or strategies that deviate notably from accepted practice standards. Their proposed alternatives appear to conflict with the riparian Factors in Schedule 1 and it is not clear what factors or guidelines are being followed. For example, the retention levels in the flowchart range widely (0-25 % of what is presumed to be basal area) from generally accepted and scientifically-substantiated levels and are not accompanied by a justification of what level of retention will be applied under what circumstances. Similarly, the provision to remove trees within 10m of an S4 stream because they "have roots that are embedded in the stream bank" directly contrasts provisions addressing the need to maintain stream and bank stability [FPPR s.52(2) and Factor 2(a)(iii)]. Furthermore, both plans roll the provision for stream bank stability into this section and neither plan directly addresses thresholds for stream bank stability or quantifies it.

Plan D was written in collaboration with plans E and F and therefore contains the proposed flowchart and written provisions as discussed above. Unlike plans E and F, plan D selects the default for restrictions within a RMZ [FPPR s.52(2)] thus gaining exemption from the requirement to write an alternative. The plan's provisions for tree retention in a RMZ deviate from common standards of practice, but to a lesser extent than plans E and F. A suite of acceptable practices in a RMZ is also proposed, but has been tailored to the plans forest development unit (FDU) and excludes removing trees with roots embedded in the stream bank.

Plan G proposes a modified version of the basal area (BA) retention table required for minor tenures in FPPR s.52(1)(a). Deviations include +/- 10 metres of retention for S5 (valley bottom and non-valley bottom), S6, L1-A and L1-B riparian areas. A rationale was not included for the change of BA retention surrounding S5, S6, L1-A and L1-B riparian areas, and there is no strategy clarifying how a value is to be selected from the range of retention widths provided. Some clarification was provided regarding the application of these alternatives, but was written in broad statements. For example, one provision stated that the trees retained would be "reasonably representative of the physical structure...before harvesting" and retained "to a level commensurate with meeting objectives", neither of which contain measurable or verifiable qualities. Another provision for retention relied on the assessment of wind-throw risk, but contained no description of how such risk would be assessed and weighed against harvesting. Plan G does not propose any innovative practices.

Plan C proposed to address retention of trees in RMZs by reiterating the "Factors relating to objectives set by government for water, fish, wildlife and biodiversity in riparian areas" verbatim as they are written in Schedule 1 of the FPPR. No results or strategies were proposed in the FSP that included a measurable or verifiable level of detail. Schedule 1 Factors are included in the FPPR as a list of considerations to be made when writing results and strategies that may help ensure proposed alternatives are consistent with objectives set by government. The Factors in Schedule 1 may be considered an adequate result or strategy when the FSP explicitly refers to submitted background information with greater detail, but are not of adequate detail themselves to be measured as stand-alone alternatives. No discussion of retention of trees in RMZs was included in the Background Information submitted with the FSP. Since no tangible proposal was made in this plan, the level of innovation or deviation from defaults could not be assessed. Although, where the plan proposed to consider a clear ecological rationale, it is unlikely to vary much if at all, since the rationale is based on established guidelines.

Plan H proposed a lengthy and creative section of results and strategies addressing the retention of trees in a RMZ that attempts to use the flexibility afforded under FRPA. The proposal is exclusive to S1-S3 and W1, W5 riparian areas, and plans to retain trees in the RMAs of these riparian classes on the likelihood of wind-throw damage occurring. It specifies that the "retention of trees is unnecessary in the RMZ" if a low likelihood of wind-throw exists, and that if a moderate or high wind-throw risk exists, retention will vary with possible edge treatments, or retention may be reduced by felling, removing or reserving trees of equivalent value elsewhere in the FDU. The plan also includes that, "should specific wildlife and/or biodiversity values be identified appropriate retention levels will be maintained to conserve and protect [them]".

While FPPR s.52(2) declares a threshold of retention to be retained, s.12(3) requires a licensee to quantify the threshold and the alternatives in plan H lack the level of detail required to measure or verify aspects of it. For example, while the proposal states that RMZ retention will be based on wind-throw risk, the plan does not specify how wind-throw risk will be determined or how it will be evaluated against retention. The strategy also mentions that any "wildlife and/or biodiversity values" identified in the RMA

will trigger "appropriate retention levels", but does not specify what wildlife or biodiversity values may be considered, how they are identified or what an appropriate retention level may be based on. Again, plan H includes that such additional retention may be afforded "on a site-specific basis", but does not specify how a site may qualify for such management. Finally, the proposal states that retention may vary with possible edge manipulation, but does not specify how or under what circumstances this will occur. The plan's quick dismissal of the need for tree retention in a RMZ with low likelihood of wind-throw is questionable since it contrasts the purpose of s.12(3) and 52(2). The use of wind-throw risk in determining RMZ retention is creative though not unique and provides the basis of the proposals made in plans D, E and F.

Results and strategies for several riparian classes were omitted without rationale, including W2, W4, and L2-L4 wetland and lakes.

The plan also adopted the additional practice of managing S4-S6, L3 and W3 areas based on stream bank and channel stability or water body integrity that are excluded from the FPPR s.52(2) provision. The plan accepts the default provision in FPPR s.52(2) for stream bank stability, but augments it further by proposing that excluded riparian classes of S4-S6 streams and L3 or W3 lakes or wetlands will be managed to "protect the integrity of the stream bank, channel or water body, on a site-specific basis within the riparian management zone, where it will benefit the protection of identified water quality, fish habitat, wildlife, and/or biodiversity values".

5.2 Practice Requirements in the FPPR

These sections do not have defaults in regulation, but conditional exemptions are available allowing the licensee to specify intended results or strategies that are consistent with the applicable objectives in FPPR s.8.1 and 8.2. No consideration of these sections is required in the plans unless proposals are made for results or strategies. A presentation of sections addressed by licensees is of relevance here since it provides a better sense of the ambition of licensees under the new framework and additional results and strategies with which to judge innovation and deviation.

5.2.1 Stream Crossings, Fish Passage and Protection of Fish and Fish Habitat (s. 55-57)

One licensee wrote alternate results and strategies addressing the cumulative hydrological effects of stream crossings, fish passage and protection of fish habitat. They addressed these sections in conjunction with their proposal for management of fisheries sensitive watersheds (s.8.1).

5.2.2 Watersheds (s. 59-61)

One licensee wrote alternate results and strategies addressing the cumulative hydrological effects on water quality affecting human health in community watersheds. They addressed these sections in conjunction with their proposal for management of community watersheds (s.8.2).

5.3 GAR Objectives

There are six riparian related GAR objectives that may apply to the area covered by a FSP. Objectives in relevant higher-level plans also need to be considered. Licensees addressed objectives in manners ranging from explicit mention of all applicable and non-applicable objectives to select mention of non-applicable objectives. In the latter case, it was not clear whether the objectives not mentioned did not apply or whether they had been overlooked. Four of the seven FSPs contained objectives enabled by regulation that required intended results or strategies.

5.3.1 Lakeshore Management Zones and Objectives (GAR s.6)

Three plans wrote intended results or strategies for lakeshore management zones. All three licensees recognised L1 lakeshore designations made in 1995 and transitioned into FRPA. Results and strategies are proposed that classify all lakeshores according to the transitioned designations and apply the appropriate RRZ, RMZ, and RMA widths as specified in a proposed table. The management strategies for each of these reserve types are specified in the respective plan sections addressing sections 50-52 and 12(3), as previously reported. This aspect of the proposal made by these licensees is both measurable and verifiable and abides strictly to Code-equivalent practices.

5.3.2 Community Watersheds and Water Quality Objectives (GAR s.8)

The licensees who had objectives for these values submitted proposals of varying complexity. Plan E proposed not to harvest or build roads in their community watershed whatsoever during the course of their FSP whereas plan C proposed a suite of results or strategies for community watersheds. Plan C's proposal was also intended as a result or strategy for watershed practice requirements in FPPR sections 59-61. The plan's results and strategies are to measure primary forest activities in areas both with and without Coastal Watershed Assessment thresholds against the guidebook thresholds (where applicable), implement monitoring accordingly and ensure that subsequent licenses and permits are managed to specific levels of hydrological impact. While plans E and C exhibit dramatically different levels of complexity, they both propose measurable and verifiable results and strategies.

5.3.3 Fisheries Sensitive Watersheds and Objectives (GAR s.14)

The objective for fisheries sensitive watersheds only applied to one plan. Plan C proposes a comprehensive suite of results and strategies for fisheries sensitive watersheds and claims the exemption for FPPR s.55 to 57. The proposal is to manage fisheries sensitive watersheds in the same manner as community watersheds. The proposal contains a measurable and verifiable level of detail, and adheres to FPC guidebook suggestions.

5.4 Trends in the FSPs

5.4.1 Multi-district and multi-licensee FSPs

No clear distinctions can be made among the plans based on their number of collaborators or geographical range. Two of the analysed plans were multi-licensee and three were multi-district. The multi-licensee plans submitted nearly identical FSPs that accept virtually all defaults. Their proposals push the bounds of acceptable practices more so than the single-licensees, yet may not be considered innovative since their substance is questionable. Ultimately, the single-licensee plans were a mixed bag of proposals and defaults with no identifiable trend.

Three multi-district plans were analysed. There is no apparent trend in results and strategies among multi-district plans.

5.4.2 Approved vs. Not Approved

A major commonality between the approved plans was that their management considerations were outlined in an organised and comprehensive manner, in some cases listing requirements from other values that relate peripherally to water and riparian. The two approved plans accepted all defaults, although plan B added detail to the proposal for s.12(3). In general, draft plans ranged widely in their level of detail, innovation, and deviation.

6.0 Discussion

A brief discussion is included to highlight the major concerns and criticisms of FRPA and whether these concerns emerge in the initial FSPs. The following discussion relates the findings to issues moving FRPA forward and explores implications for the future.

6.1 Concerns and Criticisms of the FRPA Framework

During the creation and bridging into FRPA's implementation and to date, a number of issues surfaced concerning the risk of a results-based forestry management model. Critics run along a gradient of risk

ranging from those who perceive enormous uncertainty in FRPA's ability to effectively manage forest resources, to those who believe FRPA includes adequate checks and balances to mitigate risk.

Uncertainty in the FRPA model lies in the transfer of stewardship responsibility from government to tenure holders and professionals. However, this perceived deregulation creates a lack of confidence and concern regarding government's role as landowner, decreased environmental standards, and provisions in the Act itself.

6.1.1 Government as Landowner

It is arguable that FRPA marginalizes government as the landowner and ultimate decision-maker. Broad objectives and comparatively limited intervening powers and review and approval authority help characterise government as stepping out of this role. The increased capacity of industry here is a concern to some, especially since issues have been raised in the past regarding industry's approach to forest stewardship. While professional reliance is intended to mitigate this risk, it assumes maturity among professional associations and their members not to push and test the framework. Strong critics argue that it is too risky to entrust stewardship decisions regarding the public's forest resources to foresters persuaded by industry's bottom line.

6.1.2 FRPA's Technique

Scepticism surrounds the idea of licensees proposing technically sound alternative practices, and on the bounds that will be placed on their proposals. There is concern that licensees have too much discretion and flexibility in planning that allows them to submit their own enforceable practices with limited plan content requirements rationalised with general motherhood-level statements. Furthermore, with the removal of approved silviculture prescriptions, no formalised and routine avenue exists under FRPA for agencies to obtain further information from licensees regarding their plans prior to harvest. To some extent, the required stocking standards help plan adjudicators gauge intended practices, but do not contain explicit detail regarding maintenance of proper stream and riparian functioning condition. Where adjudicators need to pursue required information to their satisfaction without a formal avenue to do so, the process may become prolonged thus negating the purpose of a decreased administrative procedure. Especially if a plan is ambiguous, there is no effective avenue for assessing the possible level of adverse environmental effects until after they occur.

The caveat of not causing a "material adverse impact" may also be problematic since it is difficult to measure. For example, in the case of temperature sensitive streams, proving a material adverse impact on fish at the level of stream reach or population is especially problematic since it is costly, imprecise, and results may not be seen for many years.

The idea of proposing results and strategies for riparian values provokes the question of how many ways there could be of managing such areas soundly. The FPC had been an amalgamation and partial implementation of available scientific riparian management knowledge to date. FPC riparian standards

were explicitly termed 'minimum' standards; therefore few, if any, acceptable alternative avenues of management could exist beyond it short of "Code-plus" practices. This concern was realised when Riverside Forest Products implemented a results-based pilot study that undertook to identify a more ecologically based approach to riparian and fish habitat management than the specific reserve widths specified in the FPC. A major attempt was made to find innovative new ways of distributing tree retention along streams that would serve to provide the right amount of retention to maintain ecosystem functions along reaches identified on an ecological basis. Costly and lengthy assessments and inventories were required, and significant challenges were faced in identifying appropriate reach units. However, an articulated alternative management system, and operational harvesting based on it have not yet been realised.

One of the most deep-rooted concerns regarding FRPA is the condition that licensees must only be "consistent" with stated government objectives, and not meet or "achieve" them. This condition has far-reaching implications for liability should a practice result in unforeseen material adverse effects. Licensees may be excused from practices that result in inconsistencies if their practice was in good faith; in effect, this stipulation absolves them of responsibility for the end result.

6.1.3 Environmental Standards

Environmental standards under FRPA are a prevailing and long-standing concern left over from the FPC. While the FPC elevated environmental standards, riparian standards were generally understood to be minimum requirements; therefore, concern exists that allowing licensees to deviate from it is effectively environmental deregulation where lesser standards are proposed.

The elimination of silviculture prescriptions (SPs) is among the most highly contentious changes. The SP process required significant personnel and time resources, but SPs were a valuable check-up piece, providing measurable site-level detail for compliance and enforcement and plan adjudication by DDMs. Without SP approval required before harvesting, there is limited opportunity to spot a potentially damaging practice in a FSP before it occurs.

Similarly, practice requirements in FRPA do not need to be addressed in a FSP: the issues of stream crossings, fish passage and protection of fish habitat need only be adhered to in practice. Under the Code, these values had specific prescriptions (e.g. 5-m machine-free zones), but are now embodied in FRPA in generalized statements that a licensee need only remain "consistent with". Without such provisions, the plans of licensees become much less transparent and can be less specific, direct, and measurable.

Finally, there is also concern in allocating the responsibility of environmental stewardship to licensees. For example, some licensees have proposed the practice of logging right to streambank because of anticipated wind-throw. In this instance, the results-based model allows professionals the flexibility to decide under what circumstances such harvesting may be acceptable and consistent with objectives. However, it can be argued that this strategy may ignore the role that wind-throw plays in maintaining several channel and aquatic ecosystem functions. It may also ignore ways that riparian harvesting can be

undertaken to minimize wind-throw in RMZs. In particular, given the available knowledge regarding detrimental stream impacts of harvesting, critics can argue that such practices should not be discretionary and should be outwardly prohibited.

6.2 Discussion of Results

There are a variety of observations to be made from the FSPs proposed to date about the nature of their alternatives, but perhaps the most salient is the level of uncertainty among licensees of what is expected in an alternative. Licensees have a grasp of FRPA but there is an element of misunderstanding about the level of detail that must be provided to support alternatives. To a large degree, this is an issue that remains between the DDMs and licensees and is unlikely to impede the approval process significantly. Also, given that six of the eight plans analysed in this report are in draft stage, it is possible that the final submissions of these plans will be revised to eliminate some concerns.

6.2.1 Use of non-statutory elements

Non-statutory elements are considered to be integral and supportive of sound resource management, but are not required and licensees may equally make use of other available management guides. The purpose of comment here is to gain insight as to whether licensees are using the provided non-statutory elements in order to gauge whether further development of these elements is needed, and to better understand how the components of FRPA are interacting.

There is limited evidence that licensees have considered the non-statutory elements of FRPA. In some FSPs, prescriptions are overemphasised to the point that licensees appear to be ignoring or neglecting to include the non-statutory elements such as due diligence, professional reliance, or use of guidelines including guidebooks etc. For example, the results and strategies of three draft plans do not appear to have considered the riparian Factors (Appendix 5) and it is unclear what, if any, factors or guidelines were consulted. Conversely, guidebook provisions are explicitly included in plan C where assessment procedures for community and fisheries sensitive watersheds are incorporated along with figures proposed by the Clayoquot Sound Scientific Panel.

6.2.2 Use of alternatives

Overall, licensees opted towards defaults. There could be a number of reasons for this including comfort with existing practices, convenience, anxiety, surety that plans will be accepted, or that licensees simply did not perceive the need to propose an alternative at the time of writing their FSPs.

6.2.2.1 Innovation

The results and strategies proposed showed limited innovation. The most innovative riparian management proposal may be the retention currency strategy made in plan H. In general, proposals seemed to push boundaries where a licensee had felt restricted under the FPC. Instead of proposing a unique and creative alternative, many licensees effectively proposed not to continue to adhere to old Code-level practices. Plan D, E and F provide the best example of this since their results and strategies for retention of trees in a RMZ are self-exempting from Code-equivalent practices. Innovative practices are not a requirement under FPRA, but are included in the intent. As previously discussed, there may be a limited number of variations of practices possible to achieve a given result, and thus innovation may not always be possible.

Furthermore, innovation is not always economically viable. Any licensee who opts for a creative practice will be required to substantiate that practice with a sound rationale. There is also the increased likelihood that a FSP containing innovation will be tied up in the adjudication process while it is scrutinised. Many licensees may not have the freedom or tolerance to postpone logging while the plan is in this process. Small operators are even less likely to have the economic ability to propose innovative practices for the above reasons. It is therefore likely that innovation will only be seen in plans where a licensee has a compelling reason to propose an alternative or has sufficient funding flexibility to support the extended planning and adjudication process.

The reluctance of professionals to manage innovatively may also be a relic of the binding provisions of the FPC: professionals may be opting for familiarity, security and simplicity. It may take several years to realise the opportunities built into FRPA, both for unique management and to truly fill their professional shoes by taking on greater responsibility for forest practices and management. Ultimately, it is too early to tell whether licensees will attempt innovative practices. However, innovation becomes more likely as users grow increasingly comfortable with the flexibility that FRPA affords.

6.2.2.2 Deviation from Default Practice Requirements

Six of the eight FSPs proposed at least one alternative or modification of a default (Table 2). Concerns from each plan were the degree of deviation, the minimalist nature of proposed practices in terms of environmental stewardship, and the amount of supporting detail included with proposals. In the latter case, it was often difficult to glean the structure of the proposal and assess the degree and nature of the deviation. An alternative in plans E and F provides a good illustration: the plans propose that the RMZs of S4 to S6 streams "begin at the point where overstory tree cover begins, rather than at the edge of the stream channel bank". While this is an unalterable practice requirement, it provides insight into licensees' intent and is worth discussion. From such a level of detail, it is difficult to assess to what degree this practice deviates

from the Code, and what the implications are of this proposal. If this margin begins over the channel, then the width of the riparian area will be narrower than required by default standards, and thus appears to represent a lesser degree of protection for the channel and aquatic ecosystem values. Conversely, this proposal may be the licensee's alternative to remain consistent with objectives set by government and provide an on-the-ground practice that meets or even exceeds Code-level practices. Furthermore, a variation of this nature on a stream of this size may be insignificant. Without further explanation, it remains unclear how much this proposal differs from a default.

Several of the proposals by licensees seem to push the limits of acceptability. This is true in particular, where the results and strategies appear to simply opt licensees out of precautions in riparian areas (plans E and F). There are several possible explanations for this- most pessimistically, it may be an exhibition of denial or frustration for continuous regulatory changes and burdens; realistically, it may be the nature of meeting the bottom line by reaching for more harvest opportunities, or a misunderstanding of the framework. Optimistically, it may be a scientifically rationalized practice option. Numerous reasons exist, but it is impossible to tell for certain unless the deviation is accompanied by adequate detail to understand what is proposed.

Seemingly marginal practices are welcome as proposals- the caveat is that licensees must provide supporting information that they are sound and justified in a given circumstance. Difficulty arises when there is a lack of sufficient detail to gauge the proposed practice. Currently, FRPA requires certain plan contents, but licensees who push the limits of commonly accepted practice may be asked how their practice is consistent with objectives set by government, regardless of whether they have included all the required components- it is in this manner that DDMs retain authority. If a licensee wants to propose and adopt perceptibly sub-Code practices for certain sites, they need to provide a sound and transparent rationale to advance the approval of their plan.

6.2.2.3 Ambiguity

The general ambiguity of proposed results and strategies is directly related to deviations from common standards of practice. Difficulties in comprehension and adjudication arise when there is not an adequate level of detail to communicate intent. Six of the eight licensees made proposals where the intent was not clear and practices were not qualified or quantified. Such ambiguities stand out as red flags of uncertainty. The two approved plans possessed little ambiguity since all defaults were accepted. The proposed alternatives of two draft plans stood out as ambiguous since it was not evident what their proposals were based on. Another draft had clearly considered the riparian Factors (having cited them as results and strategies), but had not elaborated on them or included a tangible scheme. Therefore, it was not possible to gauge the complexity or innovation of their proposed practices.

6.2.3 Multi- licensee and Multi-district Plans

Multi-licensee and multi-district FSPs have the opportunity to include a greater level of detail due to the availability of group resources, or be simple and broadly applicable to all collaborators. The results indicate that there is little difference between the quality and quantity of the output of multi- or single-licensee plans. Realistically, this is to be expected since the purpose of collaboration is greater efficiency in meeting the goal - not surpassing the goal. It may be possible that the quality of the multi-licensee plans is compromised by increased collaboration. For example, in plans E and F, there was concern over the level of detail provided and what materials had been consulted in their development. Specific concerns are the ambiguity of the RMZ tree retention flow chart, whether results and strategies adequately address the compound riparian objectives, and potential scientific discontinuities in the alternatives. The geographic range of the plans did not seem to have any direct bearing on their content other than encompassing a broader range of possible objectives.

6.2.4 FSP Status: Approved vs. Other

There was a distinct relationship between plan content and plan status. As could be expected, the approved plans showed commonalties such as transparency, acceptance of defaults and a thorough address of plan requirements. Since the plans accepted default practices in regulation, there was no level of innovation. Conversely, plans D, E, F and H contained concerns about the proposed practices, namely the dismissal of restricted activities in a RRZ or RMZ and the general lack of detail supporting the results and strategies.

While at first glance, the pattern of approval appears to be a bias by DDMs towards conservative practices and defaults outlined by government, it more likely reflects an adjusting level of trust and confidence between licensees and DDMs. However, clearly adopting defaults makes plan adjudication simpler. Until DDMs become more comfortable with how a licensee will behave given their new flexibility, it is likely that plans with defaults will be approved more rapidly and with less effort by licensees than where plans deviate from familiar practices.

6.3 Implications and Observations about the Transition to FRPA

The findings of this report have reaching implications for the many groups and processes involved in FRPA feedback. Implications for critical groups and inputs are highlighted below.

6.3.1 Training, Implementation and C&E

To date, numerous training materials have been delivered province-wide and/or are currently accessible. The findings of this report will be most salient to groups directly involved in FRPA implementation, such as the Provincial FRPA Implementation Team (PFIT), DDMs, and to some extent, FREP.

PFIT is an inter-agency group with a varied membership including representatives from the Ministry of Forests, Ministry of Water, Land and Air Protection, Ministry of Sustainable Resource Management, industry and resource professionals. It draws input from operation level field staff and reports to an upper-level management committee that co-ordinates information with other inputs, including FREP. PFIT has been responsible for identifying key pitfalls for implementation and overcoming them. They have been involved in FRPA training, pilot studies, produced key interpretative materials and continue to focus on establishing the relationship between government and industry that will be instrumental in FRPA's success. PFIT has also been responsible for the training of DDMs. Likewise, FREP will play a role in identifying areas of FRPA implementation where further training and aid is required for a smooth transition.

Both FREP and PFIT should be aware of the current level of understanding of FRPA as exhibited in the FSPs. Licensees appear to have grasped their technical responsibilities and developed plans that are not far off the mark. Some plans contain errors; many have elements missing comprehensiveness, clarity and detail. Plans are not wholly relying on the provided non-statutory elements; in some cases, licensees were focused on delivering the prescribed requirements and seemed to overlook inputs such as BMPs, due diligence, and established science. While basic FRPA training is no longer required, a higher-level training mechanism that emphasises the fundamental non-statutory elements of FRPA management and a reminder/highlight of the checks and balances in the model may be beneficial for licensees. Additionally, many of these concerns may be remedied by reliance upon trained and qualified professionals who, with training and support, can possess a superior knowledge of FRPA.

Alternatively, the results-based model could be allowed to run its course between licensees and DDMs, with firm support for DDMs. They have the final opportunity of precedent setting: it is up to them right now to set the standard of acceptance for FSPs. As virtually no precedents exist, they are able to demand higher due diligence, higher levels of reference material and demand better practices overall by reminding the licensee's that, under FRPA, they are directly accountable to the public interest and their social and professional licenses. Efforts should focus on strengthening DDMs in their current role of defining a new relationship between themselves and licensees.

All groups involved in implementation should be aware that there are difficulties to be overcome in getting licensees to recognize the new sphere of management they operate within. However, it is likely too soon to judge from the FSPs how licensees will eventually interpret the standards and the framework. There are only two approved plans that can be considered precedents; all else are non-binding and not precedent setting. Draft plans certainly contain concerns surrounding their proposed practices. Some of the proposals may be characterised as finding the 'holes in the floor' and using exemptions as excuses. This is especially the case regarding retention alternatives based on streamside wind-throw. A sound guard against this is to

emphasise the requirements of proof commensurate with deviation to ensure the licensee has based their practice on a defensible set of factors.

6.3.2 Effectiveness Evaluations

Given the concerns expressed surrounding FRPA's ability to maintain environmental standards, feedback processes are essential in determining whether the practices of licensees under the results-based scheme are effective in achieving government's resource goals.

Effectiveness evaluations (EEs) and Compliance and Enforcement (C&E) are two distinctly separate processes by which FRPA is measured. While C&E enforces and measures the legality of practices, EEs comprise a new feedback process aimed specifically at the continuous improvement (CI) aspect of FRPA. A pilot test recently conducted for the district level resource stewardship monitoring element of EEs raised issues around the effectiveness of riparian practices, especially on small, non-fish bearing streams, and reaffirmed the need of such input for the improvement of riparian management schemes.

The pilot study is unpublished and surveyed 47 streams managed under the FPC and earlier. The purpose of the study was to determine the adequacy and preparedness of the riparian indicators, but the findings were also expected to be a useful reference point with which to compare future FRPA evaluations. The results highlight several environmental concerns regarding riparian management and confirmed their existence under the previous management regimes. The study found that 19 of the 47 streams were fully functioning and the remainder were amongst the categories of "at risk", "at high risk" or "non-functioning". Specific concerns were high levels of sedimentation and related low aquatic invertebrate diversity. The stream impacts were found to originate from roads, excess debris in stream channels and high wind-throw in areas of low or no RMZ tree retention. Findings of this nature and as FRPA moves into implementation are salient and provide a critical basis for measurement of practices under FRPA.

The pilot study indicates that FREP will deliver concrete and quantifiable data judging practices on the ground under FRPA. FREP's design makes it an integral commentary on how FRPA works in the field - it is expected to provide critical feedback about FRPA's health. In particular, EE's will provide the first results to link alternatives to on-the-ground practices. C&E undertakings will be able to provide a direct measurement of compliance with plans; however, EE's can deliver the unique result of whether licensees have managed to uphold Code-level practices and if resources are being managed properly. In this reporting capacity, FREP is clearly poised to be the primary policy change trigger for FRPA (discussed below).

The purpose of Effectiveness Evaluations is frequently confused with that of Compliance and Enforcement, and there is misunderstanding as to how the two work in concert to manage forest practices. For example, C&E are mandated to assess licensee adherence with law, whether it is defaults in regulation or stated alternatives in a FSP. Under the Code, this was a comparatively simple matter; however, under

FRPA, uncertainty may arise as to who may be liable in the event that a licensee adheres verbatim to an approved plan, yet the practice results are not as intended or desired. In such a situation, it remains unclear as to whether the licensee would be in non-compliance. In a case like this, perceived Officially Induced Error could limit C&E in their ability to address the issue, but EE are well equipped to identify this as an issue in the overall management of natural resources, and channel it into continuous improvement as such. EE's also contribute to forest resource management by reinforcing the job of C&E through the scrutiny of practices generally, through advertising the results by including them in the FRPA CI process. In addition, potential contraventions identified by staff conducting the EE will be passed on to C&E staff to address. This ultimately means monitoring of forest resources from a broader perspective.

To date, FRPA effectiveness evaluations have focused solely on the environmental aspects of management. FRPA, however, aims to equally incorporate both social and economic values. To this end, effectiveness evaluation programs targeted at measuring FRPA's achievements in these realms may also be necessary.

6.3.3 Policy and Legislation Development

It is too early to tell whether further policy or legislation development will be necessary and what mechanisms, other than FREP, will highlight the need for it. Currently, conclusions about FRPA's implementation can only be drawn from an insufficient sample of two plans, and its effectiveness data will not exist, at the earliest, until the season in which practices in approved plans are carried out. To some extent, concerns are emerging in the draft-stage plans that were identified back in the early process (issues such as the tendency of FRPA to generate ambiguous results and strategies and the potential deviation of proposed practices toward sub-Code levels). While these are issues to monitor closely, they have not emerged definitively in the approved plans.

Again, there are a number of FRPA-tailored feedback, monitoring and CI mechanisms to instigate and channel any potential policy or legislation change. Foremost among these mechanisms is FREP. As previously discussed, this program is designed specifically to monitor the practical effects of management standards and practices under FRPA, compare it to Code-equivalent practices and report whether or not resources are being managed appropriately and to a standard consistent with government's objectives.

Beyond FREP exists PFIT and the Minister's Forest and Range Practices Advisory Council (PAC), both of which influence policy and legislation development from different angles. PFIT is responsible for identifying and reporting implementation difficulties to the Assistant Deputy Minister of the Operations Division in the Ministry of Forests. PFIT's concerns are drawn directly from on-the-ground implementation issues and the group is therefore well positioned as an implementer to recognise problems with no immediate solutions. PAC is a council of individuals representing key stakeholders appointed by the minister to periodically review and assess FRPA for the purpose of continuous improvement. Whereas PFIT's concerns arise as immediate implementation challenges, PAC deals with higher-level issues of

concern and reports these directly to the minister. In this manner, PAC and PFIT are equipped to sufficiently collect and address FRPA policy concerns arising from a variety of sources and on numerous levels.

6.3.4 Development of advice for the non-statutory realm of FRPA

The goal of creating FRPA was to deregulate and provide forest managers with greater versatility for practices. In order to compensate for less legislation, the elements of the non-statutory realm were adopted to provide clarification and guidance regarding the standards government expects. These elements form a significant part of FRPA (Appendix 2) and therefore play a critical role in its transition and long-term health. A number of the non-statutory elements previously existed, but have been emphasised under FRPA in order to afford users flexibility. A degree of risk is involved by including and expecting licensees and the professionals they employ to use and rely on the non-statutory elements without explicitly including them in the statute itself and, as previously discussed, the outcome of this risk is just beginning to be seen.

There is varied use of the non-statutory elements in FSPs. It was evident in four plans in particular, that guidelines, BMPs, and scientific documents played a minor role. Conversely, one plan based their results and strategies on the non-statutory elements of guidelines and BMPs. Realistically, the presence of many of the elements will be difficult or impossible to detect at the level of a FSP if they are not explicitly included (e.g., SOPs, training, communication), but may be detectable by C&E and FREP evaluations.

FRPA's success as a results-based scheme relies on use of these elements by licensees and their professionals, all of which contain no legal bearing. Short of legislating their use, more emphasis and promotion of these elements by all parties is needed to bring their value to the attention of licensees. It should be emphasized that plans that exhibit their use will likely experience greater ease of approval than those that do not. Recognising the fact that it is not the intent of government to endorse the non-statutory elements (like in the case of FPC guidebooks), some promotion is required to ensure licensees are aware of their potential usefulness in overall FSP success. Since the latest round of FRPA training is now complete, DDMs remain a direct channel of information to licensees. Therefore, DDMs are a convenient and likely avenue for promoting the non-statutory elements of FRPA. DDMs can communicate professional to professional and encourage the use of non-statutory elements, either those created and identified in partnership by government, or any developed by the licensee.

In addition, other forms of promotion should be considered- namely emphasis on these elements in further training, promotion by DDMs and the circulation of supportive and explanatory documents. Possible vehicles of this message may include government agencies (to a limited extent), district managers, and most appropriately, practitioner communities. Ultimately, licensees need to be aware and motivated by the fact that sustained deregulation hinges on their use of FRPA's non-statutory elements.

6.3.5 Public Communication

It is vital that the general public understands the process and mechanisms with which FRPA addresses their values. Widespread public understanding provides critical endorsement to the resource management community, but is valuable to the public in order for them to avoid confusion and frustration surrounding the management of their resources. The discussion in this report is intended as a synthesis and interpretation of the management of riparian areas under FRPA, and should provide transparency around the Act by describing how it functions, documenting its provisions, and explaining the current debate around the new results-based scheme.

6.4 Key Observations

1. Licensees are attempting to use the flexibility provided to them. FSPs exhibit varying levels of deviation from commonly accepted practices.
2. It may be difficult to understand a licensee's proposal due to the lack of supporting detail. This misunderstanding can lead to concern regarding the apparently marginal nature of some proposals.
3. There is limited innovation in the FSPs. Licensees are opting for familiarity and simplicity. This may be due to the overhead costs of supporting new alternatives through plan approval, but other reasons are also possible.
4. The use of the non-statutory elements does not appear to be widespread. While some plans were clearly developed using certain non-statutory elements, it was unclear in other plans what proposals were based on.
5. The nature of plans approved early will stand as a precedent for those that follow. For this reason, DDMs retain influence over potential forest practices.

6.5 Recommendations

It is too early to provide true recommendations since only two plans are currently approved. However, recommendations are included here as possible steps to consider should implementation proceed unchanged as observed in this report.

1. Firmly support DDMs during their transition time in their capacity to
    a. Influence the level of detail provided in a FSP; and
    b. Influence a licensee's transparent use of non-statutory elements of FRPA, whether they are those identified by government or a unique suite identified by the licensee.
2. Continue to support the implementation of FRPA by working with industry and professional associations, and other parties to provide higher-level training, resource and communication

materials. Continued assistance in implementation will facilitate understanding among users and reinforce FRPA's intent. Target promotion to practitioner communities.

3. Carry out monitoring and evaluation processes for the FRPA objectives of streamlining and cost saving, and continue further monitoring and evaluation of innovation under FRPA.

7.0 Conclusions

Transition to the new results-based *Forest and Range Practices Act* is in full swing. As with any new process, there is a period of anxiety while it remains to be seen whether the design will emerge as planned, and how new components will function and interact. The goals of this report were to identify and evaluate the status of these new interactions and provide topical notification to the implementers and users of FRPA in order to assist them in delivering as smooth a transition as possible.

There is management consistency between the two statutes despite their mechanisms and architecture. A number of provisions from the FPC were incorporated directly into FRPA to ensure adequate stewardship of riparian areas and aquatic ecosystems. Criticisms of FRPA centre around uncertainty of the new expression of authority, and uncertainty of resource professionals working for the forest industry either based on historical record or founded in the belief that government should manage the land base, not industry professionals.

Licensees are businesses that strive for efficiency, compliance and cost-effectiveness in their undertakings. It should therefore be expected that FSPs adhere to the familiar and successful baseline of practices established under the Code except where innovation is the least costly alternative. In most cases, defaults in regulation were accepted and proposed results and strategies were either conservative and limited in innovation, or deviated with a lack of explanatory detail. Innovation in particular, may be especially difficult for licensees to support since providing a rationale for extended practices may not be cost-effective, especially for smaller operators. In general, licensees were focused on the legislated requirements, and excluded the non-legislated elements. This could be due to a misunderstanding of the unconventional role of the non-statutory elements involved in FRPA, a perceived lack of need for them, or the use of other elements that may not have been clearly communicated in the plans.

FRPA's short term success and establishment will be based on standards set by delegated decision makers as they make their determinations, and standards set by licensees and the various professionals in preparing quality plans and in their performance in practices. The long-term success hinges on the abilities of FRPA's feedback mechanisms, such as effectiveness evaluations. DDMs have influence over the new FSPs, and consequently, over management practices. Each DDM is going to require a varying degree of explicitness depending on the values they are balancing in the district and trust in the licensee, and will adjudicate with varying levels of comfort and tolerance for new practices and amount of supporting information. Continuous improvement and supportive mechanisms such as PFIT, FREP and PAC will be critical in identifying concerns and sponsoring improvements in the FRPA model over the long-term.

It is the transition from the *Forest Practices Code* to the *Forest and Range Practices Act* itself that carries more risk than the model: all parties involved need to evolve their roles to rely on and collaborate with each other. Despite deregulation and reallocation of responsibility, authority remains in the Act, grounded in social license, embodied in legislation and supported by professional reliance, due diligence and a host of mechanisms and processes. The risk is greatest now - at this point all parties need to exert their best efforts in comprehending and constructing a strong foundation and favourable reputation on which to move forward. While FRPA retains ample legislative authority to stand alone, its success as intended depends on healthy positive-feedback where all those involved understand and take pride in their roles.

8.0 References

BC Ministry of Forests. 2005. Administration Guide for Forest Stewardship Plans. Draft for internal review. Version 1.03.

BC Ministry of Forests. What's New In FRPA (2005): FRPA Training Companion Guide.

Beaudry, P.G., Hudson, P. and Hickey, D. 1999. Riparian Management of S4 Streams in the Prince George Forest District. *In* Proceedings of the S4 Riparian Management Workshop. Prince George, BC.

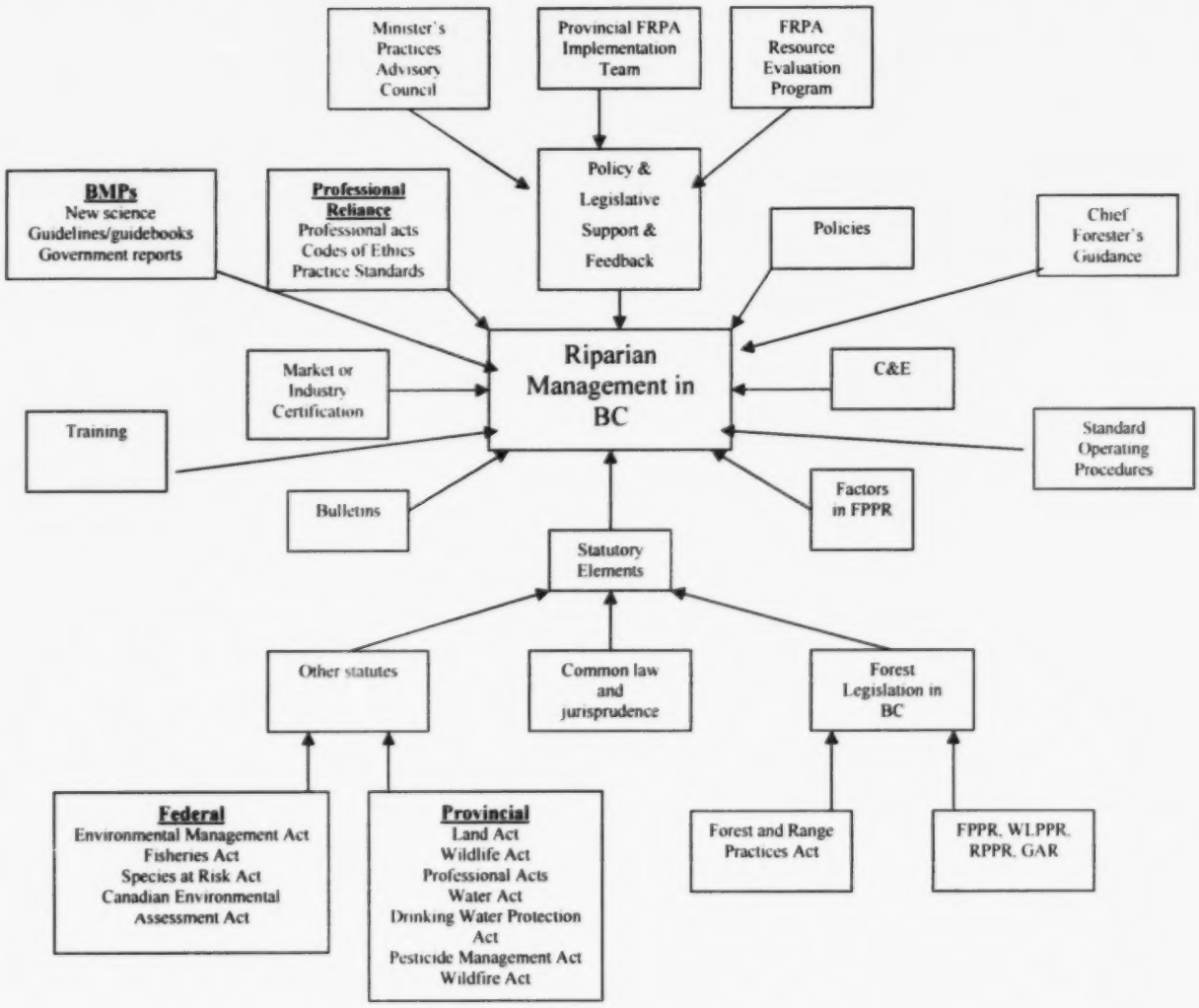
Chatwin, S., Tschaplinski, P., McKinnon, G., Winfield, N., Goldberg, H., and R. Sherer. 2001. Assessment of the Condition of Small Fish-bearing Streams in the Central Interior Plateau of British Columbia in Response to Riparian Practices Implemented under the Forest Practices Code. Crown Publications, Victoria, BC.

The Forest Practices Code of British Columbia Act. RSBC 1996. c.159.

The Forest and Range Practices Act. SBC 2002. c.69.

Appendix 1.

Elements that contribute to riparian management in BC

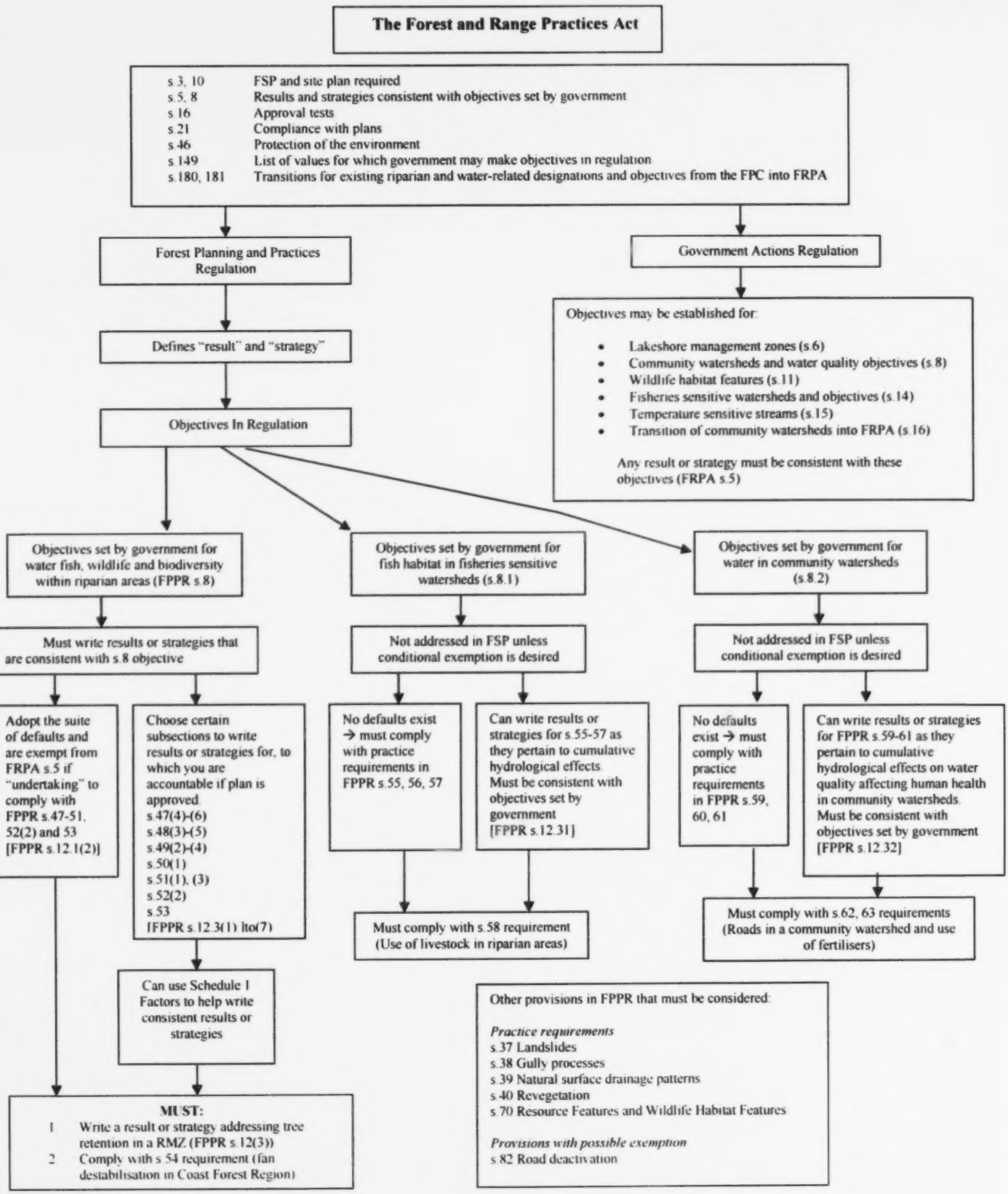

Minister's Practices Advisory Council
Provincial FRPA Implementation Team
FRPA Resource Evaluation Program
Policy & Legislative Support & Feedback
BMPs
New science
Guidelines/guidebooks
Government reports
Professional Reliance
Professional acts
Codes of Ethics
Practice Standards
Policies
Chief Forester's Guidance
Riparian Management in BC
Market or Industry Certification
C&E
Training
Standard Operating Procedures
Bulletins
Factors in FPPR
Statutory Elements
Other statutes
Common law and jurisprudence
Forest Legislation in BC
Federal
Environmental Management Act
Fisheries Act
Species at Risk Act
Canadian Environmental Assessment Act
Provincial
Land Act
Wildlife Act
Professional Acts
Water Act
Drinking Water Protection Act
Pesticide Management Act
Wildfire Act
Forest and Range Practices Act
FPPR, WLPPR, RPPR, GAR

Appendix 2.

Forest and range practices in BC: non-statutory framework

Appendix 3.

The management of riparian areas under FRPA.


The Forest and Range Practices Act
s.3, 10 FSP and site plan required
s.5, 8 Results and strategies consistent with objectives set by government
s.16 Approval tests
s.21 Compliance with plans
s.46 Protection of the environment
s.149 List of values for which government may make objectives in regulation
s.180, 181 Transitions for existing riparian and water-related designations and objectives from the FPC into FRPA
Forest Planning and Practices Regulation
Government Actions Regulation
Objectives may be established for:
Lakeshore management zones (s.6)
Community watersheds and water quality objectives (s.8)
Wildlife habitat features (s.11)
Fisheries sensitive watersheds and objectives (s.14)
Temperature sensitive streams (s.15)
Transition of community watersheds into FRPA (s.16)
Any result or strategy must be consistent with these objectives (FRPA s.5)
Defines "result" and "strategy"
Objectives In Regulation
Objectives set by government for water fish, wildlife and biodiversity within riparian areas (FPPR s.8)
Objectives set by government for fish habitat in fisheries sensitive watersheds (s.8.1)
Objectives set by government for water in community watersheds (s.8.2)
Must write results or strategies that are consistent with s.8 objective
Not addressed in FSP unless conditional exemption is desired
Not addressed in FSP unless conditional exemption is desired
Adopt the suite of defaults and are exempt from FRPA s.5 if "undertaking" to comply with FPPR s.47-51, 52(2) and 53 [FPPR s.12.1(2)]
Choose certain subsections to write results or strategies for, to which you are accountable if plan is approved.
s.47(4)-(6)
s.48(3)-(5)
s.49(2)-(4)
s.50(1)
s.51(1), (3)
s.52(2)
s.53
[FPPR s.12.3(1) lto(7)
No defaults exist → must comply with practice requirements in FPPR s.55, 56, 57
Can write results or strategies for s.55-57 as they pertain to cumulative hydrological effects. Must be consistent with objectives set by government [FPPR s.12.31]
No defaults exist → must comply with practice requirements in FPPR s.59, 60, 61
Can write results or strategies for FPPR s.59-61 as they pertain to cumulative hydrological effects on water quality affecting human health in community watersheds. Must be consistent with objectives set by government [FPPR s.12.32]
Can use Schedule 1 Factors to help write consistent results or strategies
Must comply with s.58 requirement (Use of livestock in riparian areas)
Must comply with s.62, 63 requirements (Roads in a community watershed and use of fertilisers)
MUST:
1 Write a result or strategy addressing tree retention in a RMZ (FPPR s.12(3))
2 Comply with s.54 requirement (fan destabilisation in Coast Forest Region)
Other provisions in FPPR that must be considered:
Practice requirements
s.37 Landslides
s.38 Gully processes
s.39 Natural surface drainage patterns
s.40 Revegetation
s.70 Resource Features and Wildlife Habitat Features
Provisions with possible exemption
s.82 Road deactivation

Appendix 4.

Comparison of the riparian management provisions in the Forest Practices Code Act of BC and the Forest and Range Practices Act.

Comparison of riparian resource management provisions in the Forest and Range Practices Act and the Forest Practices Code of B.C. Act. The table is intended as an overview of the specific provisions relating to management of the resource value and associated provisions in the relevant Act for the purpose of comparison. For brevity, many planning-related provisions were excluded if they did not pertain directly to the resource value.

Riparian values in the Forest and Range Practices Act (column 1) and Regulations (column 2)		*Comparable components in the Forest Practices Code of BC Act, Regulations, Guidebooks*
Fish and Fish Habitat		
***Middle column Bold**=a prescription in regulation where alternatives may not be proposed. Exemption is only by written consent of the Minister.*		
Part 2. FSP, SP and WL Plan • s.3 FSP, WLP or SP required • s.5 Results or strategies required for objectives and must be consistent with objectives (the new 'adequately manage and conserve' test) • s.10 Requires a SP is prepared prior to development activities and requires the SPs show how the intended results or strategies apply to the site (location on a map) • s.16 plan approval tests (code s.41) • s.8 Allows gov to force amendments *Part 3. Forest Practices* • s.21 Requires results are achieved and strategies are carried out as indicated in the plan *Part 5. Protection of Resources* • s.46 Prohibits environmental damage	Objectives in regulation (FPPR): s.8 The objective set by government for water, fish, wildlife and biodiversity is, without unduly reducing the supply of timber from British Columbia's forests, to conserve, at the landscape level, the water quality, fish habitat, wildlife habitat and biodiversity associated with those riparian areas. s.8.1 In fisheries sensitive watersheds, activities must prevent material adverse effects on the species of fish and associated fish habitat for which the fisheries sensitive watershed was designated, but only to the extent it doesn't unduly constrain timber supply	*FPC Act Part 2. Strategic Planning, Objectives and Standards* Establishes a planning framework by creating four strategic plan types that must comply with the objectives of higher-level plans *FPC Act Part 3. Operational planning Requirements for Government and for Forest and Range Tenure agreements* Dictates contents of four required operational plans: FDPs Logging Plan Site Plan Silviculture Prescription

<table>
<tr>
<td rowspan="3">Part 9 Regulations and Standards
• s.149 Enables government to make the 11 value objectives
• s.150.1 Government may identify areas of significant downstream fisheries value and significant watershed sensitivity and specify objectives for them
• s.150.2 Government may designate lakeshore management zones and make objectives and regulation for them
• s.150.5 Government may make regulations regarding the designation, establishment and classification of riparian areas
• s.151 Government may make regulations for plans
• s.153 Government may make regulations for planning and practices

Part 11 Transitional
• s.180.181 Grandparents area designations under the FPC (e.g. community watershed, significant downstream fisheries values, watershed sensitivity, lakeshore management zones) and continues any established objectives for them.</td>
<td>Objective enabled by regulation (GAR) for:
• s.6 Lakeshore management zone
• s.11 Fisheries sensitive feature, marine sensitive feature or another feature as a wildlife habitat feature.
• s.14 Fisheries sensitive watersheds and objectives.
• s.15 Temperature sensitive streams</td>
<td>FPC Act Part 4. Forest Practices Specific to Forest and Range Tenure Agreements and the Government
Identifies obligations to protect the environment</td>
</tr>
<tr>
<td>s. 12 (3) requires that a plan propose results and/or strategies to addresses retention of trees within a RMZ. May adopt the default in s.52(2). Minor tenures are required to comply with basal area specifications in s.52(1).</td>
<td rowspan="2">Timber Harvesting and Silviculture Practices Regulation, (sections):
4: Harvesting within community watersheds
5:Harvesting on potentially unstable terrain
6: Harvesting adjacent to previously harvested cutblocks

<u>Division 2- Protection of Streams and Riparian Areas</u>
8: Harvesting adjacent to unidentified or incorrectly classified streams, wetlands, or lakes
9: Felling of modifying trees in a RRZ
10: Constraining slash and debris in and around aquatic environments
11: Restricted operation of machinery
12: Yarding, skidding and log drop areas
13: Maintaining stream bank stability
14: Temporary stream crossings
15: Retention of streamside trees</td>
</tr>
<tr>
<td>s.37 Forest practices must not cause a landslide which results in adverse impacts on fish, water, wildlife or biodiversity.</td>
</tr>
</table>

	s.38 Forest practices on the Coast must not cause a gully process which results in adverse impacts on fish, water, wildlife or biodiversity	<u>Division 4- Temporary Access Structures</u> 20.1: Temporary landings, borrow pits or gravel pits under a site plan 21: Constructing a landing 22: Deactivating landings that are permanent access structures 23: Rehabilitating a temporary road or landing 23.1: Rehabilitating a temporary borrow pit or gravel pit 23.2: Rehabilitating a corduroyed trail or compacted area 26: Limitations on where an excavated and bladed trail may be constructed 27: Requirements when constructing an excavated or bladed trail 28: Requirements to rehabilitate excavated or bladed trails
	s.39 Road and access structures must maintain or comply with natural surface drainage patterns.	39: Use of livestock for site preparation or brush control 43: Use of fertilisers
	s.40 Revegetation is required within 2 years to mitigate sediment input to streams and lakes	*Forest Road Regulation, (sections):* 4: Selecting road locations 9: Building or installing drainage systems 10: Revegetation 13: Road inspection and maintenance 14: Timing windows and measures for road deactivation 15: Road deactivation
	s. 47. Stream riparian classes including active flood plain, redefines stream classification adding explicit S1A stream specifications. Exemptions for stream riparian reserve widths (s.47 (4)-(6)) available if proposed intended result or strategy for obj.8 is approved	
	s.48. Defines wetland riparian classes Exemption for stream riparian reserve and management zones widths (s.48 (3)-(5)) available if proposed intended result or strategy for obj.8 is approved.	
	s. 49. Defines lake classes adding L1B and L1A lake classifications Exemptions for lake riparian reserve widths (s.49 (2),(3)) available if proposed intended result or strategy for obj.8 is approved	
	s.50. Restrictions on activities within a RMA including building roads, road upkeep activities and gravel extraction. An exemption from the restriction on road location is available if proposed intended result or strategy for obj.8 is approved	

	s.51. Restrictions on activities within a RRZ including tree cutting, modification and removal, and restrictions on allowable silviculture treatments An exemption from the cutting/modification restrictions (s.51 (1)) or the allowable silviculture treatments (s.51 (3)) is available if proposed intended result or strategy for obj.8 is approved.	Operational and Site Planning Regulation, (sections): 12: Terrain mapping in community watersheds 14: Watershed assessment required 15: Riparian assessment required 16: Terrain stability assessment required for community watersheds 17: Terrain stability assessment required for areas outside community watersheds 17.1: Prescribed forest resources 18: Map and information required for all FDPs 36.2: Content of site plans 37: Information required prior to SP approval 39:Content of prescriptions 59: Riparian classes of streams 60: Maximum widths of riparian reserve zones and RMZs 61: Riparian classes of wetlands 62: Maximum widths of riparian reserve zones and riparian management zones for wetlands 63: Riparian classes of lakes 64: Maximum widths of riparian reserve zones and riparian management zones for lakes 65: Community watershed designation: review and comment 66: Community watershed designation: notice of an impending order 71: Regionally important and identified, threatened or endangered fish:
	s.52 (1) RMZ Restrictions detailing basal area retention for retaining representative stand structure (for minor tenures).	
	s.52 (2) Riparian classes where stream bank stability must be addressed in the plan. An exemption from the prescriptions in s.52 (2) is available if the proposed indented result of strategy for objective 8 is approved.	
	s.53 Temperature sensitive streams- consider crowns and understory when felling, modifying or removing trees in an RMA Exemption possible for approved alternative	
	s.54. Fan destabilization- activities on Coast must not cause fan destabilization that has negative impacts on values listed in s. 149(1) of the Act.	
	s.55 Stream channel crossings must protect the channel and the bank and be removed when use has expired Exemption for approved results or strategies	
	s.56 Activities can not inhibit fish passage unless fish aren't spawning or migrating and the cause of the material adverse impact is removed immediately when its use has expired. Exemption for approved results or strategies	
	s.57 Timing and nature of the forest activity may not harm fish or fish habitat Exemption for approved results or strategies	
	s.58 Restrictions on livestock near riparian areas	
	s.70 Activities must not damage the integrity of wildlife habitat features or resource features.	
	s.82 (1)(d) Roads must be stabilized to minimise effects	

	to values in FRPA s.149(1) Exemption may be obtained	
Water and Watersheds		
FRPA sections 3, 5, 8, 10, 16, 21, 46, 149, 180, 181 • s.150 allows Government to make designations, set objectives for community watersheds and make regulations • s.150.1authorizes WLAP to identify areas of significant downstream fisheries value and significant watershed sensitivity and specify objectives for them	Objective in regulation for water in community watersheds (FPPR s.8.2): Activities must prevent a material adverse impact on the quantity of water or timing of the flow of water from licensed waterworks and may not cause a material adverse impact which cannot be treated by systems already in place Objective enabled by regulation (GAR): s.8 Government may designate a community watershed and set objectives for it s.16 transition of community watersheds into FRPA	*Timber Harvesting and Silviculture Practices Regulation, (sections):* 4: Harvesting within community watersheds 5:Harvesting on potentially unstable terrain 6: Harvesting adjacent to previously harvested cutblocks
	s.37 Forest practices must not cause a landslide which results in adverse impacts on fish, water, wildlife or biodiversity.	<u>Division 2- Protection of Streams and Riparian Areas</u> 9: Felling of modifying trees in a RRZ 10: Constraining slash and debris in and around aquatic environments 11: Restricted operation of machinery 12: Yarding, skidding and log drop areas 13: Maintaining stream bank stability 15: Retention of streamside trees
	s.38 Forest practices on the Coast must not cause a gully process which results in adverse impacts on fish, water, wildlife or biodiversity	<u>Division 4- Temporary Access Structures</u> 20.1: Temporary landings, borrow pits or gravel pits under a site plan 21: Constructing a landing 22: Deactivating landings that are permanent access structures 23: Rehabilitating a temporary road or landing 23.1: Rehabilitating a temporary borrow pit or gravel pit 23.2: Rehabilitating a corduroyed trail or compacted area 26: Limitations on where an excavated and bladed trail may be constructed 27: Requirements when constructing an excavated or bladed trail 28: Requirements to rehabilitate excavated or bladed trails
	s.39 Road and access structures must maintain or comply with natural surface drainage patterns.	39: Use of livestock for site preparation or brush control 43: Use of fertilisers

	s.40 Revegetation required within 2 years to mitigate sediment input to streams and lakes	*Forest Road Regulation, (sections):* 4: Selecting road locations 9: Building or installing drainage systems 10: Revegetation 13: Road inspection and maintenance 14: Timing windows and measures for road deactivation 15: Road deactivation
	s.59 Activities can not pollute water diverted for human consumption Exemption available for s.59 if approved alternative addresses the cumulative hydrological effects on water quality affecting human health in community watersheds as they pertain to s.8.2.	*Operational and Site Planning Regulation, (sections)* 12: Terrain mapping in community watersheds 14: Watershed assessment required 15: Riparian assessment required 16: Terrain stability assessment required for community watersheds 17: Terrain stability assessment required for areas outside community watersheds 17.1: Prescribed forest resources 18: Map and information required for all FDPs 36.2: Content of site plans 37: Information required prior to SP approval 39:Content of prescriptions 59: Riparian classes of streams 60: Maximum widths of riparian reserve zones and RMZs 61: Riparian classes of wetlands 62: Maximum widths of riparian reserve zones and riparian management zones for wetlands 63: Riparian classes of lakes 64: Maximum widths of riparian reserve zones and riparian management zones for lakes 65: Community watershed designation: review and comment 66: Community watershed designation: notice of an impending order
	s.60 (1) Activities in a community watershed may not damage a licensed waterworks; and, (2) may not construct a road or harvest timber 100m upslope of a licensed waterworks. Exemption available for s.60 (2) if alternative addresses the cumulative hydrological effects on water quality affecting human health in community watersheds as they pertain to s.8.2.	
	s.61 Timber harvesting and trail building in a community watershed may not result in sediment delivery to water for human consumption. Exemption possible if alternative is approved	
	s.62 (1) The minister may identify features in a community watershed in order to conserve subsurface flow. **(2) Prescriptions for road locations near springs in a community watershed**	
	s.63 Prescriptions for use of fertilisers in community watersheds, near licensed waterworks and streams.	
	s.82 (1)(d) Roads must be stabilized to minimise effects to values in FRPA s.149(1) Exemptions may be obtained	

Appendix 5.

Factors relating to objective set by government for water, fish, wildlife and biodiversity in riparian areas as stated in the Forest Planning and Practices Regulation

Schedule 1

2 The following factors apply to a result or strategy for the objective set out in section 8 *[objectives set by government for water, fish, wildlife and biodiversity within riparian areas]*:

(a) the type of management regime that is required for a riparian area, having regard to

  (i) the need to buffer the aquatic ecosystem of a stream, wetland or lake from the introduction of materials that are deleterious to water quality or fish habitat,

  (ii) the role played by trees and understory vegetation in conserving water quality, fish habitat, wildlife habitat and biodiversity,

  (iii) the need to maintain stream bank and stream channel integrity, and

  (iv) the relative importance and sensitivity of different riparian classes of streams, wetlands, and lakes in conserving water quality, fish habitat, wildlife habitat and biodiversity;

(b) the type, timing or intensity of forest practices that can be carried out within the context of a management regime referred to in paragraph (a);

(c) the role of forest shading in controlling an increase in temperature within a temperature sensitive stream, if the increase might have a deleterious effect on fish or fish habitat.

Appendix 6.

The status of forest stewardship plans in BC.

The status of forest stewardship plans current to early May 2005.

	Approved	***Submitted***	***Draft/Review***
Coast Forest Region			
Campbell River			Western Forest Products
South Island		• BCTS • Arrowsmith TSA DFAM Group	
Chilliwack		2 by Lakeside Forest Products	
No known FSPs: North Coast, N. Island-Central Coast, Queen Charlotte Islands, Squamish, Sunshine Coast			
Northern Interior Forest Region			
Kalum	Timber Baron	• BCTS • Kalum Ventures Ltd.	Kitselas (FRA)
Vanderhoof		• Canfor Vanderhoof • SNRFL	
Prince George		BCTS Prince George	
Fort Nelson			Canfor (Fort Nelson)
Multi-licensee/Multi-district			
PG/FSJ/Vanderhoof		Sinclair Group (Apollo, L&M, The Pas, Winton Global)	
Nadina/FSJ/Skeena Stikine/Vandehoo			Canfor (Houston)
PG/Fort St.James		Canfor/Carrier/Takla Track and Timber*	
No known FSPs; Mackenzie, Peace			
Southern Interior Forest Region			
Arrow Boundary/ Kootenay Lake	Kalesnikoff		
No known FSPs: 100 Mile House, Cascades, Central Cariboo, Chilcotin, Columbia, Headwaters, Kamloops, Okanagan, Shuswap, Quesnel, Rocky Mountain			